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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/183,479 10/30/98 LIBERATORE

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PRINCETON NJ 08543-5300

EXAMINER

MAYES, M

ART UNIT

PAPER NUMBER

1734

DATE MAILED:

08/14/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/183,479

Applicant(s)
Liberatore et al.

Examiner
M. Curtis Mayes

Group Art Unit
1734



☒ Responsive to communication(s) filed on Jun 5, 2000

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-11 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-11 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Claim Rejections - 35 USC § 102

(1)

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(2)

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by IBM Technical Disclosure Bulletin for the reasons as set forth in the First Office Action.

The IBM Technical Disclosure Bulletin discloses a method of screen printing on indented ceramic green sheets comprising: hot stamping indentations of the desired conductor patterns into ceramic green sheets; screen printing metal powder paste into the indentations; stacking and laminating green sheets and co-firing to make a multilayer ceramic module.

Claim Rejections - 35 USC § 103

(3)

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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(4)

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over the IBM Technical Disclosure Bulletin for the reasons as set forth in the First Office Action.

The IBM Technical Disclosure Bulletin discloses screen printing a paste of metal powder such as silver in an organic vehicle.

Screen printing the green sheets using a silver screen printing paste having of a viscosity of about 30 poise would have been obvious to one of ordinary skill in the art as suitable viscosity for a paste for screen printing conductor patterns in the indentations in the green sheets.

(5)

Claims 4-8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the IBM Technical Disclosure Bulletin in view of Vitriol et al. for the reasons as set forth in the First Office Action.

Vitriol et al. teach that in a multi-layer, co-fired ceramic, electrical circuit patterns on the green sheets include not only metallizations but may further include resistors, capacitors, inductors and other electrical components compatible with the process, the patterns formed on the sheets by screening or any other suitable method (col. 4, lines 57-63).

It would have been obvious to one of ordinary skill in the art to have modified the method of the IBM Technical Disclosure Bulletin for making a multi-layer ceramic module by also screen printing resistors, capacitors, inductors or filters in the indentations in the green sheets as taught by Vitriol et al. as also screened on green sheets for making a multi-layer, co-fired ceramic

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laminate. Screen printing the green sheets with conductive paste to form inductors or filters, with resistor paste, or with capacitor paste would have been obvious to one of ordinary skill in the art as Vitriol et al. teach that in a multi-layer co-fired ceramic, these electrical components may also be included by screen printing.

Screening resistors using an ink or paste of ruthenium oxide or screening capacitors using an ink or paste of lead magnesium niobate or barium titanate, as claimed in Claims 6-8, would have been obvious to one of ordinary skill in the art as these materials conventionally used for resistors or capacitors.

(6)

Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the IBM Technical Disclosure Bulletin as applied to claim 1 above, and further in view of Prabhu 5,277,724 for the reasons as set forth in the First Office Action.

Prabhu teaches that multi-layered, co-fired ceramic on a metal base is formed by utilizing a bonding layer of low softening point glass and co-firing to bond the ceramic to the metal base. The bonding layer of glass provides a means of attaching the multi-layered ceramic to the base and minimizes shrinkage of the ceramic during the firing (col. 1, line 55 - col. 2, line 48).

It would have been obvious to one of ordinary skill in the art to have modified the method of the IBM Technical Disclosure Bulletin for making a multilayer ceramic module by co-firing the laminated green sheets on a metal base using a low melting bonding layer of glass as taught by

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Prabhu for attaching a multi-layered ceramic to a base and minimize shrinkage of the ceramic during firing.

Response to Arguments

(7)

Applicant's arguments filed June 5, 2000 have been fully considered but they are not persuasive.

Applicant argues that in the IBM reference, a PVA layer remains in the indentations in the greensheet, while Applicants emboss channels without any PVA or other coating being present. Applicant argues that it is not clear from the IBM reference that paste is screen printed into the indentations and argue that there is no reason to combine the references.

(8)

The Examiner maintains the rejections as set forth in the First Office Action. The IBM reference discloses forming indentions into the PVA coated side of the greensheet using an etched metal plate and filling the coated indentions with paste as by screen printing, as described in the title "Screen printing on indented ceramic green sheets" and in the disclosure text. The method disclosed by the reference meets the limitations as presently claimed in that a channel or opening is embossed in a green tape using a tool and ink is screen printed into the channel or opening.

The secondary references are combined with the IBM references for the teachings as set forth in the references as applied above. Vitriol et al. is pertinent because it teaches that in a multi-

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layer, co-fired ceramic, electrical circuit patterns on the green sheets include not only metallizations but may further include resistors, capacitors, inductors and other electrical components compatible with the process and that such patterns are also formed by screen printing. Prabhu is pertinent because it teaches that multi-layered, co-fired ceramic on a metal base is formed by utilizing a bonding layer of low softening point glass and co-firing to bond the ceramic to the metal base. The bonding layer of glass provides a means of attaching the multi-layered ceramic to the base and minimizes shrinkage of the ceramic during the firing.

Conclusion

(9)

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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(10)

Applicant is encouraged to FAX After Final Amendments (37 CFR 1.116) to expedite delivery to the Examiner. The Tech Center 1700 official facsimile number for After Final faxes is (703) 305-3599. a duplicate mailed copy of the facsimile transmission is not required and will only serve to delay processing of your application. The facsimile number for official papers is (703) 305-7718, and the fax number for unofficial papers is (703) 305-7115.

When filing a FAX in Tech Center 1700, please indicate in the Header (upper right) "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communication with PTO that are not for entry into the file of the application. This will expedite processing of your papers.


If applicant prefers to mail in After Final correspondence it is highly recommended that such be mailed BOX AF which will also facilitate processing from the mailroom and within Tech Center 1700.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis Mayes, whose telephone number is (703) 308-1977. The examiner can normally be reached on Monday-Friday from 7:45 AM-4:15 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino, can be reached on (703) 308-3853.

The receptionist number for Tech Center 1700 is (703) 308-0661.


CURTIS MAYES
PRIMARY EXAMINER

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August 11, 2000